CASE REPORTS

Foramen of Bochdalek Hernia With Acute Tension of Displaced Organs

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HERNIATION THROUGH the pleural peritoneal canal which is located in the posterolateral region of the diaphragm is very uncommon in adults and I was unable to find in the literature a case presenting with acute tension of the herniated organs, as in the one here reported. In 1959, Kirkland[1] reviewed 34 previous cases of foramen of Bochdalek hernia and presented one more. In 1963 eight additional cases were reported, four by Sugg, Roper and Carlsson[2] and four by MacDougall, Abbott and Goodhand.[3] In 1966, Powers, Sejdinaj and Oberschneider[4] added one case for a total of 44 reported in the literature.

Report of a Case

On December 9, 1968, a 20-year-old white woman was referred because an x-ray film taken in the family physician's office suggested complete pneumothorax on the left. Three days previously she had noted a slight pain in the left side of the chest while laughing, and shortly afterward she became nauseated and vomited. The pain then became less intense for a time and she rested well that evening. During the following two days, however, she was unable to eat and regurgitated and vomited all solids and most liquids.

Pain resumed intermittently, becoming more severe on December 8, with radiation to the left shoulder and along the left side of the chest. The patient said she had not had dyspnea but she did notice that she was breathing somewhat harder than usual. She had no history of trauma nor of any recent gastrointestinal problems. There was no previous history of medical abnormality of any kind.

Blood pressure at the time of admission to hospital was 140/88 mm of mercury, pulse 100 and regular, and temperature 37°C (98.6°F). The trachea, as palpated in the suprasternal notch, was shifted slightly to the right. Less than normal expansion of the left side of the chest was noted on inspiration, and resonance on percussion was greater on the left than the right. Breath sounds were normal on the right, diminished or absent on the left. Cardiac sounds were heard best to the right of the sternum and there was no murmur. No rales, wheezes or bowel sounds were present in the chest.

Hemoglobin was 13.2 grams per 100 ml of blood and leukocytes numbered 15,350 per cu mm with slight shift to the left. Urinalysis was within normal limits. An electrocardiogram showed no evidence of ischemia but did show positional deformity. Standard posterior-anterior and left lateral x-ray films of the chest showed a large sharply circumscribed collection of gas within the left

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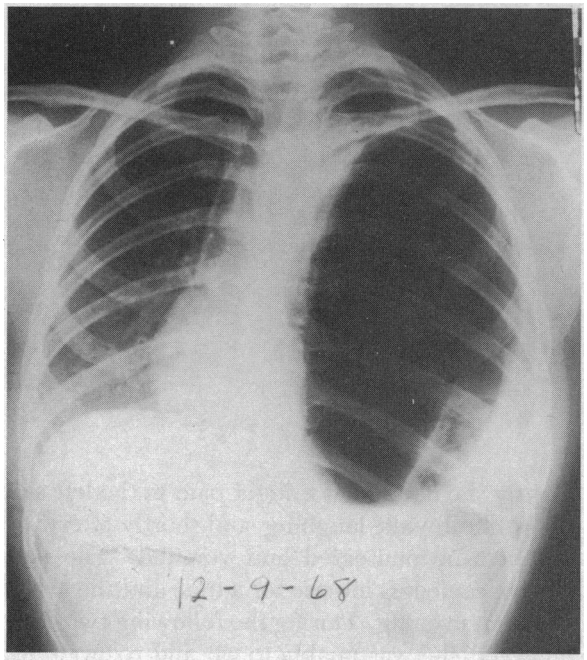

Figure 1.—A large sharply circumscribed collection of gas in left hemithorax, with mediastinum shifted to right and loops of bowel and fluid anteriorly and laterally in left side of chest.

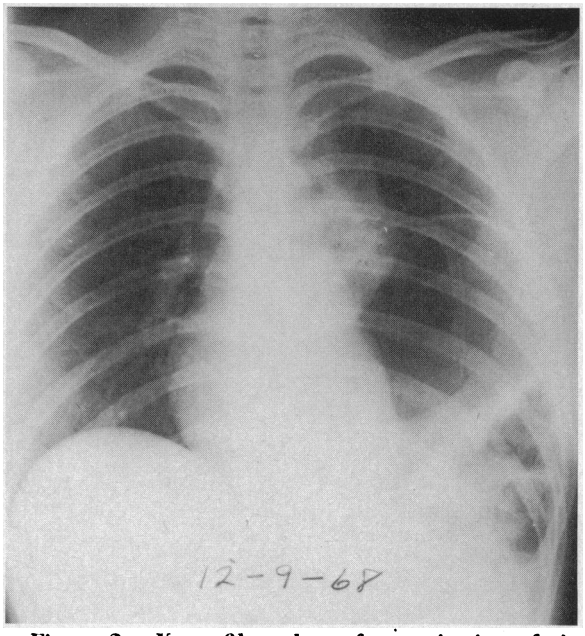

Figure 2.—X-ray film taken after aspiration of air and introduction of nasogastric tube shows mediastinum returned to midline, left lung expanded superiorly and a gas-filled viscus (containing loop of tube) in left hemithorax.

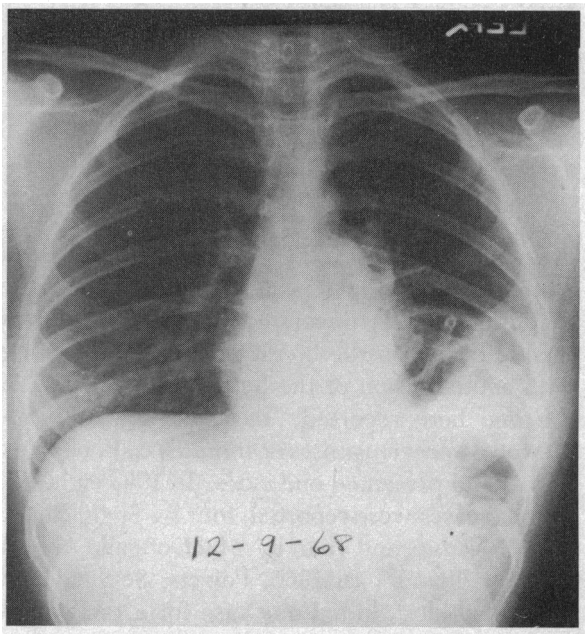

Figure 3.—Film taken evening before operation shows reduction (compared with Figure 2) in size of stomach herniated into chest.

thorax (Figure 1). The mediastinum was shifted to the right. No definite lung density was visible in the left hemithorax. A collection of gas was present in the left costophrenic angle with a small volume of fluid layered at the left costophrenic angle. The right lung was clear. The heart appeared normal in size but was shifted to the right. (An x-ray film of the chest taken by the referring physician in 1966 as a part of a routine physical examination showed no abnormality.)

With the patient in bed in a sitting position, a No. 18 needle with syringe and a three-way stopcock was inserted at the second left anterior intercostal space and 2000 cu ml of air was withdrawn. Following introduction of a nasogastric tube an x-ray film made at bedside showed the mediastinum returned to the midline, the left lung expanded superiorly and a gas-filled viscus (with nasogastric tube inside) filling about half of the left hemithorax (Figure 2).

Serial x-ray films showed gradual reduction in the size of the stomach which had herniated into the chest (Figure 3). Low intermittent suction was applied to the tube and intravenous maintenance was supplied overnight.

The next morning the abdomen was opened by upper midline incision and the entire stomach (except for the distal pylorus), the spleen and the left side of the transverse colon were found to have herniated into the left side of the chest through a defect in the posterolateral aspect of the diaphragm. Thorough exploration of the abdomen showed no other abnormalities. The

colon was first reduced, then the gastrocolic omentum and part of the greater curvature of the stomach. The defect was found to be only 10 cm in horizontal and 6 cm in vertical diameter. Some difficulty was encountered in restoring the spleen to its normal place. The lung was easily reexpanded and the defect was closed with interrupted No. 1 silk sutures after a chest tube had been placed in the seventh left anterior intercostal space.

The patient did very well after operation and was discharged December 17 with all sutures and tubes removed. She was eating a regular diet and an x-ray film showed no abnormality (Figure 4). She remained well during 12 months of observation.

Comments

None of the patients in the previously reported 44 cases presented with acute tension of the herniated organs in the chest. One of the cases reported by MacDougall, Abbott and Goodhand[2] was similar in that the stomach was massively dilated and aspiration was carried out through a needle placed in the left side of the chest. In that case, however, there was no tension and the presumable cause was trauma many years before, an upper gastrointestinal series having shown evidence of diaphragmatic hernia.

In the present case, atypical pneumothorax and acute dilatation of an abdominal viscus were considered in differential diagnosis. The left side of the chest was aspirated primarily to relieve the tension on the mediastinum and in the hope that serial x-ray studies would help clarify the diagnosis. The first film taken after aspiration of air was most helpful in suggesting that the cause was herniation of the stomach, and this was confirmed by roentgenographic visualization of the nasogastric tube in a viscus within the chest (Figure 2).

Use of an upper midline abdominal incision made exposure of the posterolateral defect in the diaphragm difficult but gave the advantage of a thorough abdominal exploration and avoidance of thoracotomy. The choice of a midline rather than a left paramedian or left subcostal incision was made because of preoperative impression of paraesophageal hernia; no consideration was given to the possibility of a defect in the pleural peritoneal canal.

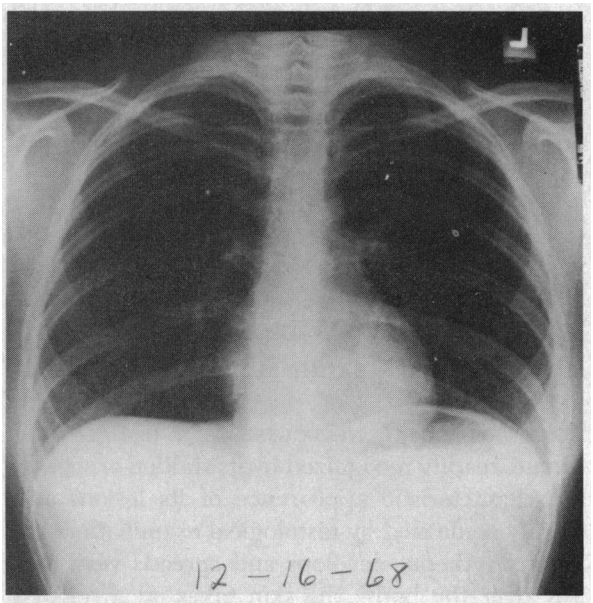

Figure 4.—Postoperative x-ray film shows no abnormality of position or tension of organs.

Summary

The first case of an acute foramen of Bochdalek hernia in an adult which presented with mediastinal shift due to acute gastric dilatation is discussed in detail.

Transabdominal reduction of the herniated organs and simple repair resulted in complete cure.

REFERENCES

1. Kirkland JA: Congenital posterolateral diaphragmatic hernia in an adult. Brit J Surg 47:16-22, 1959

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